Dec. 14, 1954 G. TOCCI 2,696,700

UNIVERSAL SANDING DISK ADAPTER

Filed Dec. 17, 1953

FIG. 1.

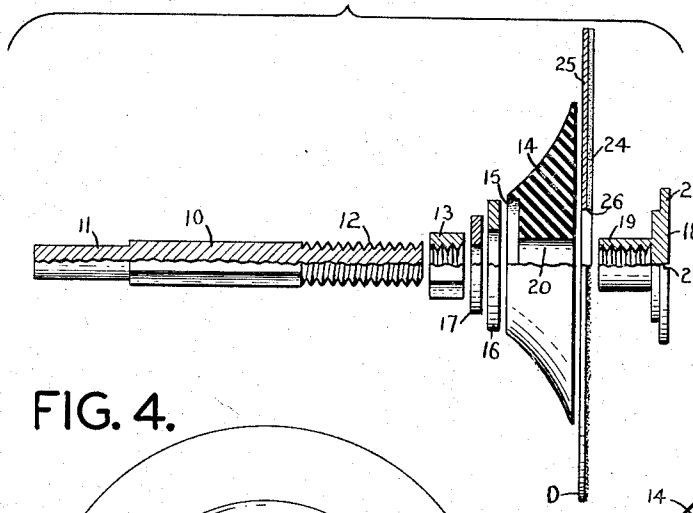


FIG. 2.

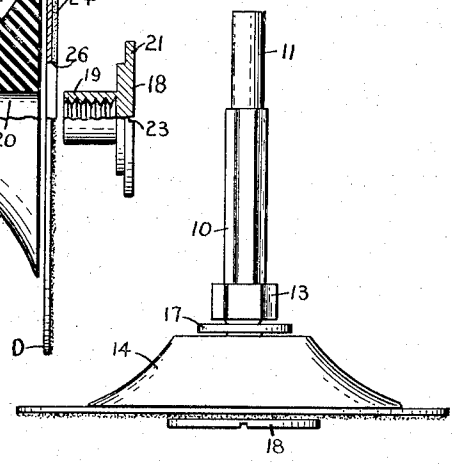
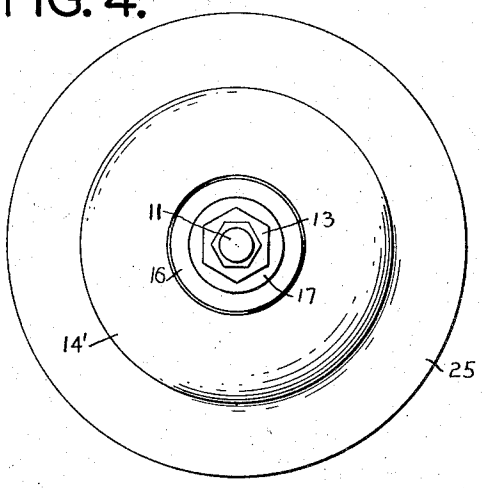


FIG. 4.



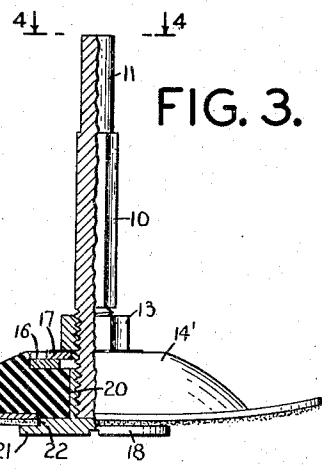
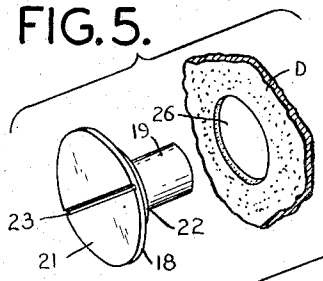


FIG. 3.

FIG. 5.



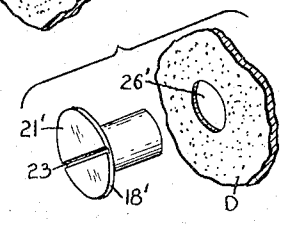


FIG. 6.

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United States Patent Office 2,696,700 Patented Dec. 14, 1954

2,696,700

UNIVERSAL SANDING DISK ADAPTER

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Application December 17, 1953, Serial No. 398,785

3 Claims. (Cl. 51—197)

This invention relates to the art of polishing and sanding devices and particularly concerns a device adapted for attachment to a portable drill chuck to provide means for supporting an abrasive disc.

In prior known rotatable sanding devices it has generally been necessary to cement a sanding disc to a rotatable plate. When the disc is not cemented to the plate it is tightly clamped at its center to a driving spindle by a suitable screw. The clamping pressure often results in rupturing the disc at its center.

It is an object of the present invention to provide a positive friction grip on an abrasive disc which is fully adjustable without affecting the position of the disc relative to the spindle. In those prior art sanding devices which employ the same fastening element to position the abrasive disc on the spindle and hold it tightly on the spindle, it is not possible to adjust the frictional grip of the disc on its backing. If the fastening element is looseened, the disc is not held securely on the spindle.

It is a further object to provide an abrasive disc device including means for positioning an abrasive disc on a spindle and further means for adjustably fitting the disc to a support.

The present invention includes a shank on which is mounted a flexible back disc secured between a flanged head and nut threaded on the shank. The head serves to position an abrasive disc on the shank. The frictional grip between the backing disc and the abrasive disc is adjusted by tightening the nut on the shank.

The invention will be best understood from the following detailed description taken together with the drawing, wherein:

Fig. 1 is an exploded side view, partly in section of parts of a device embodying the invention.

Fig. 2 is an elevational view of an assembled device including the parts shown in Fig. 1.

Fig. 3 is an elevational view partly in section of a modification of the invention.

Fig. 4 is a plan view taken on lines 4—4 of Fig. 3.

Fig. 5 is a perspective view of an abrasive disc positioning head employed in the devices of Figs. 1 to 4.

Fig. 6 is a perspective view of a modified form of abrasive disc positioning head.

In Figs. 1 and 2 is shown a spindle having a shank **10** provided with an end **11** of reduced diameter intended for insertion in a drill chuck or the like so that the device can be used as a portable sanding adapter. Shank **10** may be round but is preferably hexagonal in cross-section so that it can be readily gripped by a wrench. The other end **12** of the shank is threaded to receive nut **13**. The shank **10** serves as a spindle on which is mounted the apertured flexible rubber pad **14**. Pad **14** has a recess **15** into which fits a washer **16**. Washer **17** is provided between washer **16** and nut **13**. A head **18** is provided for the end of the spindle. The head has a cylindrical sleeve portion **19** which is internally threaded to be screwed on the threaded end **12** of the spindle. The sleeve **19** fits into aperture **20** of the pad **14** when the head is mounted on the spindle. Head **18** has a wide flanged end **21** undercut to provide a shoulder **22**. Slot **23** is provided in the outer side of the head. A sanding disc D having an abrasive side **24** and backing **25** is provided with an aperture **26** substantially equal in diameter to the shoulder **22** of the head **18**.

When the device is assembled as shown in Fig. 2, the abrasive disc seats snugly on shoulder **22** of the head **18**. Head **18** thus serves as only a positioning means for the disc when it is screwed fully on the threaded end **22** of the spindle by means of slot **23**. No effective frictional gripping pressure exists between pad **14** and the disc backing **25** until nut **13** is tightened down on the washer **17**. The degree of tightness of nut **13** determines the amount of the frictional gripping pressure between the disc and pad. The outer flange **21** of the head opposes the pressure applied by nut **13** but the tightness of fastening of the head on the spindle is not a factor in determining the amount of this pressure.

In use, the pad **14** will flex readily as the sanding disc is applied to a work piece while rotating at high speed. The concave curvature of pad **14** renders it more flexible at its periphery than at its center.

In Figs. 3 and 4 are shown details of a modification of the invention. In this modification, the pad **14'** has an outer convex curvature to provide a stiffer backing for the abrasive disc D.

In Fig. 5 is clearly shown the shoulder **22** on head **18** which engages opening **26** in the abrasive disc D. If the disc D has a smaller opening than can fit over shoulder **22**, the head **18'** of Fig. 6 may be used. The smaller opening **26'** will fit snugly on the sleeve **22**, so that disc D rests on under-side of flange **21**. Shoulder **22** is omitted.

When the device is assembled using head **18'**, the gripping pressure between pad **14** or **14'** and the disc D is adjustably determined only by nut **13** since head **18'** serves only as a positioning member for the abrasive disc.

The device disclosed, with its various modifications is economical of abrasive material because abrasive discs of large diameter which are worn at the edges can be cut down and if necessary the center holes can be enlarged so that the discs can be used in the present device.

Although the flexible discs **14** and **14'** have been indicated as made of rubber other tough, flexible materials can be used such as synthetic rubber, flexible plastic, and flexible elastomers of various types.

It will be noted that the length of sleeve **19** is less than the length of the cylindrical aperture **20** of the flexible pads **14** or **14'**. Thus the abrasive disc has a floating resilient mounting and the tightness of head **18** or **18'** cannot affect the degree of frictional pressure between the abrasive disc and flexible pad.

A limited number of modifications of the invention have been disclosed but these have been presented as illustrative of the invention and not in a limiting sense. The invention is to be construed and limited only by the scope of the following claims.

I claim:

1. A sanding adapter for a rotatable chuck, comprising a spindle having one end adapted for gripping by said chuck, a shank having at least one flat side, and a threaded opposite end, a resilient pad having a cylindrical aperture provided with a recess for receiving a washer and mountable on said spindle, a head having a flanged end and internally threaded sleeve for screwing on said threaded end, and a nut threaded on said threaded end, the length of said sleeve being less than the length of cylindrical aperture, whereby an abrasive disc having an aperture may be positioned on said spindle in contact with the flanged end of the head and said nut may be tightened to adjustably determine the frictional pressure between the said disc and pad.

2. A sanding adapter in accordance with claim 1, wherein said flanged end includes a shoulder for seating the said disc and the aperture in the disc is substantially equal in diameter to that of said shoulder.

3. A sanding adapter according to claim 1, wherein the aperture in the abrasive disc is substantially equal in diameter to that of the sleeve of said head, and the disc contacts the entire inner surface of said flanged end of the head.

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